

ABSTRACT

Metal oxide and carbonaceous reductant is fed to the surface of the first carrier material in a multi-loop melt circulation system. Reduction occurs within the layer of solid material as it floats along an extended path referred to as the reduction arm of the first loop. The heat for reduction taking place within the solid layer both via gaseous intermediates and by direct contact between the metal oxide and the carbonaceous reductant is provided by the sensible heat of the first carrier material obtained in the post-combustion arm of the first loop. The metallised raft is projected out by drag forces on to the surface of the second carrier material, which circulates in a second closed loop through a melting zone and a desulphurisation/decarbonisation zone. Gases are partially combusted to melt the metallised raft and subsequently total combustion is conducted in the post-combustion arm of the first loop.